Applicant: KOEHLER, Joachim, et al.

Serial No.: To be assigned

Based On Int'l Appl. No.: PCT/EP2005/002227

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Amendments to the Claims:

This claim listing will replace all prior versions, and listings, of claims in the application:

Listing of Claims

- 1. (original) Membrane electrode unit for membrane fuel cells, comprising an ion-conducting membrane, at least one anode electrode layer, at least one cathode electrode layer, at least one porous, water repellent gas diffusion layer mounted on the anode side and at least one porous, water repellent gas diffusion layer mounted on the cathode side, wherein
- the total pore volume of the cathode gas diffusion layer is higher than the total pore volume of the anode gas diffusion layer ($V_{Cathode} > V_{Anode}$), and
- the amount of water repellent agent in the anode and the cathode gas diffusion layer is in the range of 20 to 35% by weight (based on the total weight of the gas diffusion layer), and
- the amount of water repellent agent in the anode gas diffusion layer is identical or higher than the amount of water repellent agent in the cathode gas diffusion layer $(WRA_{Anode} \ge WRA_{Cathode})$.
- 2. (original) Membrane electrode unit according to Claim 1, wherein the total pore volume of the gas diffusion layer on the cathode side ($V_{cathode}$) is in the range from 1.0 to 2.5 ml/g and the total pore volume of the gas diffusion layer on the anode side (V_{Anode}) is in the range from 0.5 to 2.0 ml/g.
- 3. (currently amended) Membrane electrode unit according to Claim 1, wherein the water repellent agent comprises [[of]] fluorinated polymers such as PTFE, PVDF, and FEP and mixtures thereof.

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4. (original) Membrane electrode unit according to Claim 1, wherein the gas diffusion layers on the anode and/or the cathode side comprise a microlayer with a layer thickness between 5 and 30 micron.

- 5. (currently amended) Membrane electrode unit according to Claim 1, wherein the ion-conducting membrane consists of comprises proton-conducting polymer materials such as tetrafluoro-ethylene/fluorovinyl ether copolymers having acid functions, in particular sulphonic groups.
- 6. (currently amended) Membrane electrode unit according to Claim 1, wherein the electrode layers comprise [[of]] catalytically active, finely divided noble metals, such as, for example, platinum, palladium, ruthenium, gold or combinations thereof.
- 7. (currently amended) Membrane electrode unit according to Claim 1,-furthermore further comprising sealing materials and optionally reinforcing materials for gas-tight sealing on installation in membrane fuel cell stacks.
- 8. (currently amended) Membrane fuel cell stack[[,]] comprising <u>a</u> membrane electrode unit[[s]] according to any one of Claim[[s]] 1 [[to 6]].
- 9. (currently amended) Process for operating a membrane fuel cell stack with dry, unhumidified operating gases[[,]] comprising using a wherein the membrane fuel cell stack which comprises [[the]] a membrane electrode unit[[s]] according to any one of Claim[[s]] 1 [[to 6]].
- 10. (original) Process for operating a membrane fuel cell stack according to claim 9, wherein the dry, unhumidified gases comprise of hydrogen, reformate gas, oxygen or air.